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10/687,618

10/20/2003

Po-Liang Chiang

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06/28/2005

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EXAMINER

LEE, GUNYOUNG T

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/687,618 | Applicant(s) CHIANG ET AL. | |
| | Examiner Gunyoung T. Lee | Art Unit 2875 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/20/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "reflector 103" in p.1, line 25 and p.2, line 13. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 3-5, 12-14, and 20-22 are objected to because of the following informalities: "condense lens" in the claims 3-5, 12-14, and 20-22 should be "condenser lens". Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by

Ogawa et al. (US 6,644,814).

3. Ogawa et al. show a LED illumination type projector system having:

- A plurality of LED array modules (Fig. 1, 1R, 1G, 1B and col. 7, lines 9-11);
- Wherein said plurality of LED modules comprise a red LED module (1R, col. 7, lines 10), a green LED module (Fig. 1, 1G), and a blue LED module (1B);
- A cubical prism (Fig. 1, 4) surrounded by said plurality of LED modules (1R, 1G, 1B);
- A lens module (Fig. 1, 5), arranged on a light outgoing side of said cubical prism (4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3-5 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (US 6,644,814) as applied to claims 1 and 2 above, and further in view Itoh et al. (US 6,310,723).

7. Ogawa et al. is discussed in the rejection of claims 1, 2 and 6. Ogawa et al show the invention substantially as claimed except for:

- A plurality of LCD light valve panels arranged to modulate lights emitted from corresponding LED modules;
- A corresponding condenser lens arranged between said LED array and said cubical prism.

8. In regards to the LCD light valve panels and the condenser lenses, Itoh et al. disclose a projection display system having a plurality of LCD light valve panels (Fig. 2, 109R, 109G, 109B) and corresponding condenser lenses (Fig. 2, 213, 213G and col. 13, lines 14-29) arranged around the cubical prism (215). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the LCD light valve panels and condenser lenses as shown in Itoh et al. for the LED

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illumination type projector system of Ogawa et al. to enhance the utilization efficiency of light for uniform and bright color images on the projected area.

9. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (US 6,644,814) and Itoh et al. (US 6,310,723) as applied to claims 1, 6 and 10 above, and further in view of Akiyama (US 6,688,756) and Itoh (US 6,108,132).

10. Ogawa et al. and Itoh et al. ('723) show the invention substantially as claimed except for:

- An optical integrator with a first lens array and a second lens array;
- A polarization conversion system on a light outgoing side of said optical integrator.

11. In regards to the optical integrator with first and second lens arrays, Akiyama discloses an illumination optical system with an optical integrator having the first lens array (Fig. 11, 40) and the second lens array (50).

12. In regards to the polarization conversion system, Itoh ('132) discloses a polarization illuminating device with a polarization conversion unit (Fig. 4, 1040 and col. 6, lines 28-30).

13. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the optical integrator system as shown in Akiyama and the polarization conversion system of Itoh ('132) for the LED illumination type projector

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system of Ogawa et al. modified by Itoh et al. ('723) to obtain a substantially uniform intensity distribution of the light which provides high quality images on the screen.

14. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cobb (US 2003/0133079) in view of Kruschwitz et al. (US 6,594,090).

15. Cobb discloses a projection apparatus using spatial light modular having:

- A plurality of LED modules as a light source (Fig. 1, 20r, 20g, 20b, and p. 7, claim 9, line 2);
- A plurality of polarizing beam splitters (Fig. 1, 24r, 24g, 24b);
- A cubical prism (Fig. 1, 26) surrounded by said plurality of polarizing beam splitters (24r, 24g, 24b);
- A lens module (Fig. 1, 32) arranged on a light outgoing side of said cubical prism (26).

Cobb discloses a plurality of LCD spatial light modulators (Fig. 1, 30r, 30g, 30b) arranged to modulate lights emitted from the corresponding LED modules. However, Cobb does not disclose specifically a plurality of LCOS light valve panels.

16. In regards to the LCOS light valve panels, Kruschwitz et al. disclose a projection display system having a plurality of LCOS light valve panels (Fig. 6, 178R, 178G, 178B). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the LCOS light valve panels of Kruschwitz et al. for the projection apparatus of Cobb to control the illumination brightness for optimizing system design at a low cost, and to reduce the speckle for a high illumination efficiency.

17. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cobb (US 2003/0133079) and Kruschwitz et al. (US 6,594,090) as applied to claim 18, 19 above, and further in view of Ogawa et al. (US 6,644,814) and Itoh et al. (US 6,310,723).

18. Cobb and Kruschwitz et al. show the invention substantially as claimed except for:

- A plurality of LED array modules for red, green and blue lights;
- Condenser lenses arranged between the LED array and corresponding polarizing beam splitter.

19. In regards to the plural LED array modules, Ogawa et al. disclose a LED illumination type projector system having a plurality of LED array modules (Fig. 1, 1R, 1G, 1B and col. 7, lines 9-11).

20. In regards to the corresponding condenser lenses, Itoh et al. disclose a projection display system having corresponding condenser lenses (Fig. 2, 213, 213G and col. 13, lines 14-29).

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the plural LED array modules of Ogawa et al. and the corresponding condenser lenses of Itoh et al. for the projection apparatus of Cobb modified by Kruschwitz et al. to improve the intensity of the illumination light for the images with high brightness and uniformity.

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22. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cobb (US 2003/0133079) in view of Kruschwitz et al. (US 6,594,090) as applied to claim 18 above, and further in view of Akiyama (US 6,688,756) and Itoh (US 6,108,132).

23. Cobb and Kruschwitz et al. show the invention substantially as claimed except for:

- An optical integrator with a first lens array and a second lens array;
- A polarization conversion system on a light outgoing side of said optical integrator

24. In regards to the optical integrator with first and second lens arrays, Akiyama discloses an illumination optical system with an optical integrator having the first lens array (Fig. 11, 40) and the second lens array (50).

25. In regards to the polarization conversion system, Itoh discloses a polarization illuminating device with a polarization conversion unit (Fig. 4, 1040 and col. 6, lines 28-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the optical integrator system as shown in Akiyama and the polarization conversion system of Itoh for the projection apparatus of Cobb modified by Kruschwitz et al. to obtain a substantially uniform intensity distribution of the light for high quality images on the projected area, such as a screen.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roddy et al. (US 6,624,949) show a printing apparatus having: a plurality of flat LED arrays (Fig. 1, 20r, 20g, 20b); a X-cube dichroic prism (26); a uniformizer (integrating bar or lens array) (44, col. 8, lines 59-62); and a lens module (48). Hashizume (US 6,089,718) shows a projection display device with a plurality of LCD light valves (Fig. 1, 250, 252, 254) and condenser lenses (240, 242, 244). Okada (US 5,898,521) shows a LCD projector with an integrator having two lens arrays (Fig. 1, 8, 9-1 and col. 4, lines 50-57) which are disposed before and after the polarization elements (Fig. 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gunyoung T. Lee whose telephone number is (571) 272-8588. The examiner can normally be reached on 7:30 - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GTL
6/24/2005



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